

Application No. 09/991,579
Amendment dated September 10, 2004

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-104. (cancelled)

105. (previously presented) An apparatus for use in human spinal surgery across a disc space between two adjacent vertebral bodies, comprising:

a guard member having a distal end, a proximal end, and a mid-longitudinal axis through said distal and proximal ends, said guard member having a passage for providing protected access to the disc space and the adjacent vertebral bodies, said passage having a cross section transverse to the mid-longitudinal axis having a width and a height transverse to the width, the width of said passage being greater than the height of said passage along at least a portion of said passage; and

an extension extending from said distal end of said guard member for insertion into the disc space between the adjacent vertebral bodies, said extension having a portion for bearing against each of the adjacent vertebral bodies, said portion of said extension having an upper surface adapted to contact one of the adjacent vertebral bodies and a lower surface adapted to contact the other of the adjacent vertebral bodies, said portion of said extension having a height between said upper and lower surfaces and a length sufficient to properly align and distance apart the adjacent vertebral bodies.

106. (previously presented) The apparatus of claim 105, further comprising a second extension extending from said distal end of said guard member for insertion into the disc space and for bearing against the adjacent vertebral bodies.

107. (previously presented) The apparatus of claim 106, wherein said extensions are diametrically opposed to each other and spaced apart from one another to provide access to the adjacent vertebral bodies from within the disc space.

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108. (previously presented) The apparatus of claim 105, wherein the height of said extension has at least a portion that approximates the height of the normal disc space between the adjacent vertebral bodies.
109. (previously presented) The apparatus of claim 106, wherein said extensions have the same height.
110. (previously presented) The apparatus of claim 105, wherein said upper and lower surfaces for bearing against the adjacent vertebral bodies diverge away from said guard member along at least a portion of their length.
111. (previously presented) The apparatus of claim 105, wherein said upper and lower surfaces for bearing against the adjacent vertebral bodies converge away from said guard member along at least a portion of their length.
112. (original) The apparatus of claim 105 further comprising means for penetrating at least one of the two adjacent vertebral bodies.
113. (original) The apparatus of claim 112, wherein said penetrating means includes a prong for penetrably engaging at least one of the adjacent vertebral bodies.
114. (previously presented) The apparatus of claim 112, wherein said penetrating means includes teeth for insertion into the two adjacent vertebral bodies.
115. (previously presented) The apparatus of claim 112, wherein said penetrating means is located at said distal end of said guard member

Claims 116-120 (cancelled).

121. (previously presented) The apparatus of claim 105, wherein said extension has a tapered leading end to facilitate placement of said extension into the disc space.
122. (previously presented) The apparatus of claim 105, in combination with a spinal fusion implant.
123. (previously presented) The apparatus of claim 122, in combination with a fusion promoting material.
124. (previously presented) The apparatus of claim 123, wherein said fusion promoting material is bone.
125. (previously presented) The apparatus of claim 105, wherein said guard member has an outer perimeter transverse to the mid-longitudinal axis with a width and a

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height transverse to the width, the width of the outer perimeter being greater than the height of the outer perimeter along at least a portion of the mid-longitudinal axis.

126. (previously presented) The apparatus of claim 105, wherein said guard member has a generally rectangular outer perimeter transverse to the mid-longitudinal axis along a least a portion of the mid-longitudinal axis.
127. (previously presented) The apparatus of claim 112, wherein said penetrating means has a tapered leading end to facilitate placement of at least one of said penetrating means into at least one of the two adjacent vertebral bodies.
128. (previously presented) The apparatus of claim 105, wherein said guard member is a hollow sleeve.
129. (previously presented) The apparatus of claim 105, wherein said distal end of said guard member is contoured to the curvature of the adjacent vertebral bodies against which said guard member is adapted to be placed.
130. (previously presented) The apparatus of claim 105, further comprising a footplate proximate said distal end of said guard member.
131. (previously presented) The apparatus of claim 105, wherein said proximal end of said guard member has an increased outer dimension.
132. (previously presented) The apparatus of claim 105, wherein said proximal end of said guard member is configured to cooperatively engage an impaction member for receiving an impaction force for driving said guard member into the spine.
133. (previously presented) The apparatus of claim 105, further comprising a cap adapted to engage said proximal end of said guard member.
134. (previously presented) The apparatus of claim 105, in combination with a bone removal device having a portion sized for movement through said passage for forming through said guard member an implantation space at least in part across the surgically corrected height of the disc space.
135. (previously presented) The combination of claim 134, wherein said bone removal device is one of a drill, a trephine, a reamer, an end mill, a chisel, and a burr.

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136. (previously presented) The combination of claim 134, further in combination with a spinal insert adapted for insertion into the implantation space formed by said bone removal device.
137. (previously presented) The combination of claim 136, wherein said spinal insert is one of a dowel, an interbody spinal implant, and an interbody spinal fusion implant.
138. (previously presented) The combination of claim 136, wherein said spinal insert comprises at least in part bone.
139. (previously presented) The combination of claim 136, wherein said spinal insert is a bone graft.
140. (previously presented) The combination of claim 136, further in combination with a fusion promoting substance.
141. (previously presented) The combination of claim 140, wherein said fusion promoting substance is bone.
142. (previously presented) The combination of claim 140, further in combination with a press for compressing said fusion promoting substance into said spinal insert.
143. (previously presented) The combination of claim 136, further in combination with an implant driver configured to insert said spinal insert into the implantation space formed by said bone removal device.
144. (previously presented) The combination of claim 134, further in combination with an instrument for removing from the spine the bone cut by said bone removal device.
145. (previously presented) The apparatus of claim 105, in combination with a tap for insertion through said guard member for tapping the two adjacent vertebral bodies.
146. (previously presented) The apparatus of claim 105, in combination with a distractor adapted to urge apart the adjacent vertebral bodies.
147. (previously presented) The combination of claim 146, wherein said distractor is an interbody distractor.

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148. (previously presented) The combination of claim 146, further in combination with at least a second distractor, said at least second distractor being differently sized relative to said distractor to form a set of distractors of graduated sizes.
149. (previously presented) An apparatus for use in human spinal surgery across a disc space between two adjacent vertebral bodies, comprising:
 - a guard member having a distal end, a proximal end, and a mid-longitudinal axis through said distal and proximal ends, said guard member having a passage transverse to the mid-longitudinal axis for providing protected access to the disc space and the adjacent vertebral bodies, said passage having a non-circular cross section along at least a portion of the mid-longitudinal axis; and
 - an extension extending from said distal end of said guard member for insertion into the disc space between the adjacent vertebral bodies, said extension having a portion for bearing against each of the adjacent vertebral bodies, said portion of said extension having an upper surface adapted to contact one of the adjacent vertebral bodies and a lower surface adapted to contact the other of the adjacent vertebral bodies, said portion of said extension having a height between said upper and lower surfaces and a length sufficient to properly align and distance apart the adjacent vertebral bodies.
150. (previously presented) The apparatus of claim 149, further comprising a second extension extending from said distal end of said guard member for insertion into the disc space and for bearing against the adjacent vertebral bodies.
151. (previously presented) The apparatus of claim 150, wherein said extensions are diametrically opposed to each other and spaced apart from one another to provide access to the adjacent vertebral bodies from within the disc space.
152. (previously presented) The apparatus of claim 150, wherein said extensions have the same height.
153. (previously presented) The apparatus of claim 149, wherein the height of said extension has at least a portion that approximates the height of the normal disc space between the adjacent vertebral bodies.

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154. (previously presented) The apparatus of claim 149, wherein said upper and lower surfaces for bearing against the adjacent vertebral bodies diverge away from said guard member along at least a portion of their length.
155. (previously presented) The apparatus of claim 149, wherein said upper and lower surfaces for bearing against the adjacent vertebral bodies converge away from said guard member along at least a portion of their length.
156. (previously presented) The apparatus of claim 149 further comprising means for penetrating at least one of the two adjacent vertebral bodies.
157. (previously presented) The apparatus of claim 156, wherein said penetrating means includes a prong for penetrably engaging at least one of the adjacent vertebral bodies.
158. (previously presented) The apparatus of claim 156, wherein said penetrating means includes teeth for insertion into the two adjacent vertebral bodies.
159. (previously presented) The apparatus of claim 156, wherein said penetrating means is located at said distal end of said guard member.
160. (previously presented) The apparatus of claim 156, wherein said penetrating means has a tapered leading end to facilitate placement of at least one of said penetrating means into at least one of the two adjacent vertebral bodies.
161. (previously presented) The apparatus of claim 149, wherein said extension has a tapered leading end to facilitate placement of said extension into the disc space.
162. (previously presented) The apparatus of claim 149, in combination with a spinal fusion implant.
163. (previously presented) The apparatus of claim 162, in combination with a fusion promoting material.
164. (previously presented) The apparatus of claim 163, wherein said fusion promoting material is bone.
165. (previously presented) The apparatus of claim 149, wherein said guard member has an outer perimeter transverse to the mid-longitudinal axis with a width and a height transverse to the width, the width of the outer perimeter being greater than

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the height of the outer perimeter along at least a portion of the mid-longitudinal axis.

166. (previously presented) The apparatus of claim 149, wherein said guard member has a generally rectangular outer perimeter transverse to the mid-longitudinal axis along a least a portion of the mid-longitudinal axis.
167. (previously presented) The apparatus of claim 149, wherein said guard member is a hollow sleeve.
168. (previously presented) The apparatus of claim 149, wherein said distal end of said guard member is contoured to the curvature of the adjacent vertebral bodies against which said guard member is adapted to be placed.
169. (previously presented) The apparatus of claim 149, further comprising a footplate proximate said distal end of said guard member.
170. (previously presented) The apparatus of claim 149, wherein said proximal end of said guard member has an increased outer dimension.
171. (previously presented) The apparatus of claim 149, wherein said proximal end of said guard member is configured to cooperatively engage an impaction member for receiving an impaction force for driving said guard member into the spine.
172. (previously presented) The apparatus of claim 149, further comprising a cap adapted to engage said proximal end of said guard member.
173. (previously presented) The apparatus of claim 149, in combination with a bone removal device having a portion sized for movement through said passage for forming through said guard member an implantation space at least in part across the surgically corrected height of the disc space.
174. (previously presented) The combination of claim 173, wherein said bone removal device is one of a drill, a trephine, a reamer, an end mill, a chisel, and a burr.
175. (previously presented) The combination of claim 173, further in combination with a spinal insert adapted for insertion into the implantation space formed by said bone removal device.

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176. (previously presented) The combination of claim 175, wherein said spinal insert is one of a dowel, an interbody spinal implant, and an interbody spinal fusion implant.
177. (previously presented) The combination of claim 175, wherein said spinal insert comprises at least in part bone.
178. (previously presented) The combination of claim 175, wherein said spinal insert is a bone graft.
179. (previously presented) The combination of claim 175, further in combination with a fusion promoting substance.
180. (previously presented) The combination of claim 179, wherein said fusion promoting substance is bone.
181. (previously presented) The combination of claim 179, further in combination with a press for compressing said fusion promoting substance into said spinal insert.
182. (previously presented) The combination of claim 175, further in combination with an implant driver configured to insert said spinal insert into the implantation space formed by said bone removal device.
183. (previously presented) The combination of claim 173, further in combination with an instrument for removing from the spine the bone cut by said bone removal device.
184. (previously presented) The apparatus of claim 149, in combination with a tap for insertion through said guard member for tapping the two adjacent vertebral bodies.
185. (previously presented) The apparatus of claim 149, in combination with a distractor adapted to urge apart the adjacent vertebral bodies.
186. (previously presented) The combination of claim 185, wherein said distractor is an interbody distractor.
187. (previously presented) The combination of claim 185, further in combination with at least a second distractor, said at least second distractor being differently sized relative to said distractor to form a set of distractors of graduated sizes.

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188. (new) A dilator for use in soft tissue of a human body to provide an access channel to a planned surgery site adjacent the spine and comprising:
 - a tube having a proximal end and a distal end and a longitudinal axis;
 - said tube having a non-circular cross-sectional shape in a plane perpendicular to said longitudinal axis at a first location proximate said distal end.
189. (new) The dilator of claim 188 and wherein: said tube has non-circular cross-sectional shape in planes perpendicular to said longitudinal axis, said shape extending from said first location proximate said distal end to a second location at least eighty percent of the distance from said distal end to said proximal end.
190. (new) The dilator of claim 189 and wherein: said tube has a non-circular cross-sectional shape throughout its length from said distal end to said proximal end.
191. (new) The dilator of claim 189 and wherein: the shape of said non-circular cross-sectional shape of said tube is the same from said first location to said second location and has a major axis and a minor axis.
192. (new) The dilator of claim 191 and wherein:
 - the overall dimension of said dilator along the major axis is between 28 and 40 mm; and
 - the overall dimension of said dilator along the minor axis is between 14 and 20 mm.
193. (new) The dilator of claim 191 and wherein: said shape is elongate with parallel sides and circular ends with radii, the centers of the end radii being on a line bisecting the minor axis.
194. (new) The dilator of claim 188 and wherein said tube has a channel therethrough, said channel being adapted to receive a pair of side-by-side dilators each having a circular cross-section transverse to a longitudinal axis thereof.